Claims

1. A method in a network device for caching Hyper Text Transfer Protocol (HTTP) data transported in an Internet Protocol (IP) Datagram sent on a socks connection established over a Transmission Control Protocol (TCP) connection between a source port on a source device and a destination port on a destination device, said method comprising the steps of:

- identifying:
  - the source device,
  - the destination device,
  - the port on the source device,
  - the port on the destination device,

  of an incoming IP Datagram.

- determining whether the incoming IP Datagram is originated by a socks client or by a socks server:

  If the incoming IP Datagram is originated by a socks client:

- terminating the TCP connection and the socks connection;

- identifying the socks connection in a table;

- identifying the application level protocol associated with said socks connection referring to said table, said table

comprising for each socks connection an application level protocol;

- determining whether said application level protocol is HTTP or not:

5 If said application level protocol is HTTP:

- determining whether HTTP data requested by the incoming IP Datagram is in a local cache within the network device:

If HTTP data requested by the incoming IP Datagram is in a local cache:

10 • building an outgoing IP Datagram comprising requested HTTP data retrieved from the local cache; and

- sending said outgoing IP Datagram to the socks client originator of the incoming IP Datagram.

2. The method according to the preceding claim wherein:

15 If HTTP data requested by the IP Datagram are not in the local cache within the network device:

- identifying the outbound socks connection associated with the socks connection referring to the table, said table comprising for each socks connection an outbound socks connection.

- building an outgoing IP Datagram with information comprised in the incoming IP Datagram; and

- sending said outgoing IP Datagram on the outbound socks connection.

3. The method according to any one of the preceding claim 2 wherein said step of identifying the socks connection in a table, comprises the further steps of:

- determining whether the IP Datagram comprises a message for establishing a new socks connection, in particular a socks CONNECT message, or not;

  if the incoming IP Datagram comprises a message for establishing a new socks connection, in particular a socks CONNECT message:

- defining an inbound socks connection between the socks client source of the incoming IP Datagram and the network device; and

- updating the table with:

  - an identification of the socks connection;
  - an identification of the associated inbound socks connection; and
  - the application level protocol associated with the socks connection.

4. The method according to claim 2 wherein said step of identifying the outbound socks connection associated with the socks connection referring to the table comprises the further steps of:

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- defining an outbound socks connection between the network device and the destination device of the incoming IP Datagram; and

- associating in the table said outbound socks connection (604) with the socks connection of the incoming IP Datagram.

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5. The method according to claim 2 wherein:

If the incoming IP Datagram is originated by a socks server:

- terminating the TCP connection and the socks connection;

- identifying the socks connection in the table;

- identifying the application level protocol associated with
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said socks connection referring to said table;

- determining whether said application level protocol is HTTP:

If said application level protocol is HTTP:

- caching HTTP data comprised in incoming IP Datagram in the local cache of the network device;

- identifying the inbound socks connection associated with the socks connection referring to the table, said table comprising for each socks connection an inbound socks connection.

- building an outgoing IP Datagram with information comprised in the incoming IP Datagram; and

- sending said outgoing IP Datagram on the inbound socks connection.

6. The method according to claim 2, wherein said IP Datagram comprises a Source IP Address field and a Destination IP Address field in an IP header for identifying the source device and the destination device, and a Source Port Address field and a Destination Port Address field in a Transmission Control Protocol (TCP) header for identifying the source port and the destination port on said source device and destination device.

7. The method according to claims 1 or 2 wherein the step of determining whether the IP Datagram is originated by a socks client or a socks server comprises the step of:

- determining if the value of the Destination Port field comprised in the IP Datagram is equal to the value of a

destination port on a socks server or if the value of the Source Port field comprised in the IP Datagram is equal to the value of a source port on a socks server.

8. The method according to claims 1 or 2 wherein said table is dynamic and comprises for each socks connection:

• an identification of the inbound socks connection;

• an identification of the associated outbound connection;

• an identification of the application level protocol used in IP Datagrams using said socks connection.

9. The method according to any one of the preceding claims wherein said table comprises:

• for identifying each inbound socks connection:

  • an inbound source device address identifying the source device of the inbound socks connection,

  • an inbound source port address identifying the source port of the inbound socks connection,

  • an inbound destination device address identifying the destination device of the inbound socks connection,

  • an inbound destination port address identifying the destination port of the inbound socks connection,

• for identifying each outbound socks connection:

- an outbound source device address identifying the source device of the outbound socks connection,

- an outbound source application address identifying the source port of the outbound socks connection,

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- an outbound destination device address identifying the destination device of the outbound socks connection,

- an outbound destination application address identifying the destination port of the outbound socks connection,

10. A network device, in particular a router, comprising means
10 adapted for carrying out the method according to any one of the preceding claims.

11. A computer program product residing on a computer readable medium having computer readable code means for caching Hyper Text Transfer Protocol (HTTP) data transported in an Internet Protocol
15 (IP) Datagram sent on a socks connection established over a Transmission Control Protocol (TCP) connection between a source port on a source device and a destination port on a destination device, said computer readable code means comprising the steps of:

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- identifying:

  - the source device,

  - the destination device,

- the port on the source device,

- the port on the destination device,

of an incoming IP Datagram.

- determining whether the incoming IP Datagram is originated by a socks client or by a socks server:

If the incoming IP Datagram is originated by a socks client:

- terminating the TCP connection and the socks connection;

- identifying the socks connection in a table;

- identifying the application level protocol associated with said socks connection referring to said table, said table comprising for each socks connection an application level protocol;

- determining whether said application level protocol is HTTP or not:

If said application level protocol is HTTP:

- determining whether HTTP data requested by the incoming IP Datagram is in a local cache within the network device:

If HTTP data requested by the incoming IP Datagram is in a local cache:

- building an outgoing IP Datagram comprising requested HTTP data retrieved from the local cache; and

- sending said outgoing IP Datagram to the socks client originator of the incoming IP Datagram.

5   12. The computer program product according to the preceding claim wherein:

If HTTP data requested by the IP Datagram are not in the local cache within the network device:

- identifying the outbound socks connection associated with the
10   socks connection referring to the table, said table comprising for each socks connection an outbound socks connection.

- building an outgoing IP Datagram with information comprised in the incoming IP Datagram; and

- sending said outgoing IP Datagram on the outbound socks
15   connection.